Applicant : Martin Kaiser et al.
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Attorney's Docket No.: 13909-142001 / 2003P00391
US

AMENDMENTS TO THE CLAIMS

Please cancel claims 13 and 14, without prejudice or disclaimer of subject matter; and amend claims 1, 3, 4, 8, 10, 11, 16, 17, 20 and 22. This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method comprising:

storing data objects as nodes in a hierarchically-structured, multi-dimensional directed graph, the directed graph including a predecessor node, a first and a second ~~intermediary~~ given nodes, and a successor node, the successor node connected to the predecessor node via a first sequence of nodes including the successor node, the first ~~intermediary~~ given node, and the predecessor node and a second sequence of nodes including the successor node, the second ~~intermediary~~ given node, and the predecessor node;

storing, for the successor node, <u>a data table including first and second object strings, the first object string listing the predecessor node and the first given node, and the second object string listing the predecessor node and the second given node</u> ~~the first and the second sequences of nodes~~;

receiving a query involving the successor node;

comparing the query to the <u>first and second object strings</u> ~~first or the second sequence of nodes~~; and

resolving the query based upon comparing the query to the <u>first and second object strings</u> ~~first or the second sequence of nodes~~.

2.   (Cancelled)

3.   (Currently Amended) The method of claim 1 wherein storing the data objects comprises:

storing each data object in a first column of <u>the data</u> ~~a data~~ table; and

storing a relation of a first data object to a consecutive data object in a second field of the data table, where the consecutive data object is connected to the first data object in the directed graph by a single edge.

4.   (Currently Amended) The method of claim 3 wherein ~~storing the first and the second sequences of nodes comprises storing~~ the first and the second object strings are stored ~~sequences of nodes~~ in a third field of the data table.

5. to 7.   (Cancelled)

8.   (Currently Amended) The method of claim 1 <u>further comprising storing</u> ~~wherein storing the first and the second sequences of nodes comprises transforming the~~ <u>coded</u> relational information <u>in the data table</u> ~~into a coded value~~.

9.   (Cancelled)

10.   (Currently Amended) The method of claim 1 wherein storing the ~~first and the second sequences of nodes~~ <u>data table further</u> comprises updating the ~~the first and the second sequences of nodes~~ <u>data table</u> to reflect changes in the directed graph.

11.   (Currently Amended) An apparatus comprising a storage medium having instructions stored thereon, the instructions comprising:

a first code segment for storing data objects as nodes in a hierarchically-structured, multi-dimensional directed graph, the directed graph including a predecessor node, a first and a second ~~intermediary~~ <u>given</u> nodes, and a successor node, the successor node connected to the predecessor node via a first sequence of nodes including the successor node, the first ~~intermediary~~ <u>given</u> node, and the predecessor node and a second sequence of nodes including the successor node, the second ~~intermediary~~ <u>given</u> node, and the predecessor node;

a second code segment for storing, for the successor node, <u>a data table including first and second object strings, the first object string listing the predecessor node and the first given node,</u>

and the second object string listing the predecessor node and the second given node ~~the first and the second sequences of nodes~~;

   a third code segment for receiving a query involving the successor node;

   a fourth code segment for comparing the query to the <u>first and second object strings</u> ~~first or the second sequence of nodes~~; and

   a fifth code segment for resolving the query based upon comparing the query to the ~~first or the second sequence of nodes~~.

12. to 15. (Cancelled)

16. (Currently Amended) The apparatus of claim 11 wherein the second code segment stores <u>coded relation information in the data table</u> ~~the first and the second sequences of nodes as a coded value generated from information about the predecessor node, the first and the second intermediary nodes, and the successor node and their locations within the directed graph~~.

17. (Currently Amended) A system comprising:

   means for storing data objects as nodes in a hierarchically-structured, multi-dimensional directed graph, the directed graph including a predecessor node, a first and a second ~~intermediary~~ <u>given</u> nodes, and a successor node, the successor node connected to the predecessor node via a first sequence of nodes including the successor node, the first ~~intermediary~~ <u>given</u> node, and the predecessor node and a second sequence of nodes including the successor node, the second ~~intermediary~~ <u>given</u> node, and the predecessor node;

   means for storing, for the successor node, <u>a data table including first and second object strings, the first object string listing the predecessor node and the first given node, and the second object string listing the predecessor node and the second given node</u> ~~the first and the second sequences of nodes~~;

   means for receiving a query involving the successor node;

   means for comparing the query to the <u>first and second object strings</u> ~~first or the second sequence of nodes~~; and

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means for resolving the query based upon comparing the query to the <u>first and second object strings</u> <s>first or the second sequence of nodes</s>.

18.   (Cancelled)

19.   (Cancelled)

20.   (Currently Amended) The system of claim 17 wherein the means for comparing the query to the <s>first or the second sequence of nodes</s> <u>first and second object strings</u> comprises means for performing a pattern match between the query and <u>the first object string</u> <s>a first data string listing the first sequence of nodes</s> and means for performing a pattern match between the query and <u>the second object string</u> <s>a second data string listing the second sequence of nodes</s>.

21.   (Previously Presented) The method of claim 1 wherein the first sequence of nodes is different from the second sequence of nodes.

22.   (Currently Amended) The method of claim 1 wherein comparing the query to the <s>first or the second sequence of nodes</s> <u>first and second object strings</u> further includes accessing the first and <u>second object strings</u> <s>the second sequences of nodes</s>.